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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,523	08/18/2003	Chien-Wei Li	H0003938	5963
7590 Honeywell International, Inc. Law Dept. AB2 P.O. Box 2245 Morristown, NJ 07962-9806			EXAMINER MILLER, DANIEL H	
			ART UNIT	PAPER NUMBER
			1775	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/25/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/644,523	<b>Applicant(s)</b> LI ET AL.	
	<b>Examiner</b> Daniel Miller	<b>Art Unit</b> 1775	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-15,16-19,20-22,24,26,27,29,30,32-38,40,41 and 43-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-15,17-19,22,24,26,27,29,30,32-38,40,41 and 43-48 is/are allowed.
- 6) ☒ Claim(s) 16,20 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,733,908) in view of Stowell (US 6,207,295).
3. Lee teaches a Si-based substrate with a multi-layered thermal barrier coating (abstract), but is silent as to applicants claimed coating.
4. Stowell teaches a turbine blade with a thermal barrier coating comprising alternating layers of SiO<sub>2</sub> and Ta<sub>2</sub>O<sub>5</sub> (claims 1-3 ref. and figures). The multilayer coating comprises the same material claimed by applicant in defining applicant's claimed isolation and oxygen barrier layers. The layered system of Stowell can comprise many successive layers of Silica and tantalum oxide (see figure 1), meeting claim requirements for second and third layers of isolation or oxygen barrier layers.
5. The multilayered coating diffuses oxygen and prevents the formation of oxides (column 3 line 15-25).
6. It would be obvious to one of ordinary skill in the art at the time of the invention to apply the same coating to the Si-based substrate of Lee in order to diffuse oxygen and

Art Unit: 1775

prevents the formation of oxides which corrode the substrate. The tantalum oxide layer is deposited using CVD (column 4 line 49-60).

7. The barrier layer, including (SiO<sub>2</sub>) layers, would be expected to inherently prevent diffusion of oxygen as claimed since it is substantially the same material taught by applicant.

8. The tantalum oxide layer is deposited using CVD (column 4 line 49-60; column 5 line 47-55).

***Allowable Subject Matter***

9. Claims 1,2,4-15,17-19,22,24,26,27,29,30,32-38,40,41 and 43-48 are allowed.

***Response to Arguments***

10. Applicant's arguments filed 3/30/2007 have been fully considered but they are not persuasive. The 102 rejection of claim 38 has been withdrawn due to amendment. Further, all other rejections except independent claims 16 and 20 and dependent claim 21 have been withdrawn due to amendment. However, the rejections over independent claims 16 and 20 and dependent claim 21 are maintained. Applicant argues that the layers of Stowell and Lee would not be combinable because the layers of Stowell are thinner than those of Lee and are not contemplated on a more macro scale, as claimed. The examiner disagrees with applicant's arguments. Applicant points to the claimed thicknesses of the Stowell layers being 0.1-0.23 and 0.1 to 0.4 microns for the tantalum oxide and SiO<sub>2</sub> respectively (claim 6 Stowell). However, the reference clearly teaches

Art Unit: 1775

that the alternating layers can be 0.05 to 1.2 microns (column 4 line 5-10). The upper range of 1.2 microns overlaps with the lower range of applicant's claimed range, and the range given in Lee of 1 to 500 microns (Lee col. 8 line 59-62).

11. Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention to apply the same coating to the Si-based substrate of Lee in order to diffuse oxygen and prevents the formation of oxides which corrode the substrate. Rejection maintained.

### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1775


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Miller whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571)272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel Miller

  
JENNIFER MCNEIL  
SUPERVISORY PATENT EXAMINER  
4/23/17